CLAIMS

CLAIM 1. A fuel reformer for reforming a hydrocarbon base fuel into a hydrogen rich gas, wherein a Cr oxide layer is formed on at least a part of a surface of steel material making the reformer.

CLAIM 2. The fuel reformer of claim 1, wherein said Cr oxide layer is formed on a surface of a fuel combustion gas passage side.

CLAIM 3. The fuel reformer of claim 1, wherein said Cr oxide layer is formed on a surface of a mixture gas passage from a fuel supply portion for supplying the reformer with mixture gas of raw fuel for reforming and water vapor to a reforming catalyst filled portion.

CLAIM 4. The fuel reformer of claim 1, wherein said Cr oxide layer is formed on a surface of a fuel combustion gas passage side and also on the surface of the mixture gas passage from a fuel supply portion for supplying the reformer with mixture gas of raw fuel for reforming and water vapor to the reforming catalyst filled portion.

CLAIM 5. The fuel reformer of any of claim 1 to 4, wherein an average thickness of said Cr oxide layer is 5 to 100 μm.

CLAIM 6. The fuel reformer of claim 1 to 5, wherein a thin film having a Cr concentration higher than a Cr concentration of a base material is formed on a surface of steel material making the reformer, and thereafter a Cr oxide layer formed by heat treatment is formed thereon.

CLAIM 7. A manufacturing method of a fuel reformer comprising the steps of; forming a Cr oxide layer on a surface of raw steel material through a heat treatment of said raw steel material in an oxidizing atmosphere of 600 to 1000 ℃, and manufacturing the reformer using raw steel material where said Cr oxide layer is formed thereon.

CLAIM 8. A manufacturing method of a fuel reformer comprising a step of forming a Cr oxide layer on a surface of raw steel material, through a heat treatment of the fuel reformer made of said raw steel material in an oxidizing atmosphere of 600 to 1000 ℃.

CLAIM 9. A manufacturing method of a fuel reformer comprising the steps of; forming a thin film having a Cr concentration higher than a Cr concentration of a base material on a surface of raw steel material, and thereafter forming a Cr oxide layer on the surface of said raw steel material through a heat treatment in an oxidizing atmosphere of 350 to 650 ℃, and manufacturing the reformer using raw steel material where said Cr oxide layer is formed thereon.

CLAIM 10. A manufacturing method of a fuel reformer comprising the steps of; forming a thin film having a Cr concentration higher than a Cr concentration of a base material on a surface of raw steel material, and thereafter forming a Cr oxide layer on the surface of said raw steel material, through a heat treatment of the fuel reformer made of said raw steel material in an oxidizing atmosphere of 350 to 650 ℃.